



BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Building Services Engineering Pearson BTEC International Level 3 Extended Diploma in Building Services Engineering
Unit number and title	Unit 27: Plumbing and Fluid Behaviour in Building Services Engineering
Learning aim(s) (For NQF only)	A: Understand the properties, behaviour of water how it is sourced, cleansed to the required standards and distributed. B: Undertake the design of plumbing and above-ground drainage installation for a property. C: Develop and apply the principles of dynamic fluid flow in pipes and ducts.
Assignment title	Plumbing a domestic dwelling
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are employed as a trainee building services engineer working for a consulting engineering company. You have won a project to design the building services for a new development of six single storey domestic dwellings (refer to Figure 1 below). The site is located on the outskirts of a city within one hundred metres of a mains water supply. A typical layout plan for one unit on the development is shown in Figure 2 below. The domestic dwellings are to have a clear floor to ceiling height of 3.5m, and to be constructed from the materials given in Table 1. The client requires the following appliances in the dwelling: • In the bathroom a bidet, bath with shower over, wash basin and toilet. • In the en-suite bathroom a shower, wash basin and toilet. • In the kitchen a washing machine, dishwasher and sink. The dwelling is to be designed to maintain a constant comfortable temperature of 21 °C. The typical external winter temperature is -1.0°C and summer temperature is 18 °C.
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Task 1	You have been asked to support the preparation of a briefing report for the client. The report is required to explain the options for providing potable water to the new development. You are to explain: (a) The journey the water makes from the likely source to the point of mains connection. This should include the typical cleansing processes undertaken to ensure the water is safe to drink. (b) How water be distributed to the six properties from the main supply. (c) The effectiveness of the standard governing the provision of clean safe drinking water.
Checklist of evidence required	A briefing report explaining how water can be supplied to the six properties.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
AB.D1	Evaluate the effectiveness of the current regulations and consider the stakeholders' requirements when distributing water to and installing a cold-water supply for a given scenario.
A.M1	Access the current regulations and requirements that need to be considered for the distribution of cold water and installation for a given scenario.
A.P2	Explain how water is distributed to the consumer.
A.P1	Explain the current regulations and requirements that need to be considered for delivering clean water to a property.
Task 2	You have been asked to assist with the preparation of the design of the plumbing, above ground drainage and heating systems using a gas fired boiler and radiators for the proposed dwelling. You are to: (a) Specify appropriate appliances and components for dwelling. (b) Sketch a schematic diagram providing the dimensions and the position of all pipework and ductwork. (c) Identify the position of any required ventilation flues. (d) Prepare flowrate and heat loss calculation to justify your design. (e) Explain how your final design complies with current regulations and standards.
Checklist of evidence required	A portfolio of drawings, calculations and written evidence developing a plumbing system for a domestic installation.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
B.D2	Produce a comprehensive system design that fully meets the requirements of the building services system for a given scenario.
B.M2	Produce a detailed design that meets the needs of a given scenario.
B.P5	Explain the design requirement for plumbing, above ground drainage and gas installation for a given scenario.



B.P4	Produce a design layout for a property.
B.P3	Select appliances and components for a property.
C.D.3	Demonstrate the selection of pipes and ducting, including dimensional details, flow rates and the energy losses involved, to meet all the needs of a building services system for a given scenario, justifying all the choices.
C.M.3	Produce a pipe and duct system design that mostly meets the requirements of a given scenario.
C.P7	Select the appropriate pipe and ducting for the building services system.
C.P6	Assess the behaviour of fluids in the building services system.



Sources of information to support you with this Assignment	Pearson BTEC National Construction Student Book Authors: Simon Topliss, Mike Hurst, Simon Cummings. Sohrab Donyavi
Other assessment materials attached to this Assignment Brief	Figure 1 - Site Plan Figure 2 - Typical layout of a dwelling

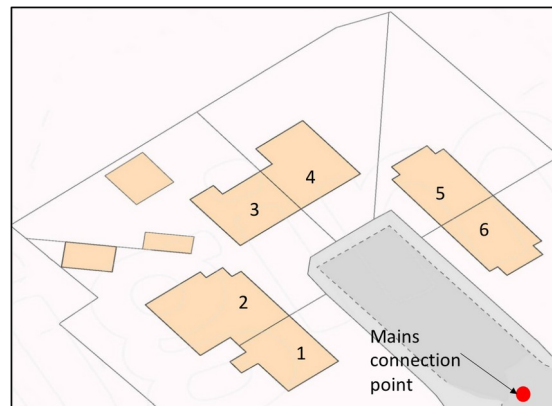


Figure 1- Site Plan



Figure 2 - Typical Layout of Dwelling

Building Element	Material
External Walls	100mm brick outer skin, 50mm wool insulated cavity, 100mm blockwork and 10mm plaster.
Internal Walls	100mm blockwork with 10mm plaster on either side.
Ceilings	12.5mm plasterboard, 100mm glass wool

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	quilt insulation
Roof tiles	Slate.
Windows	PVC framed double glazed windows typical size 1.5m x 1.1m.

Table 1- Typical Dwelling Construction Materials